

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/718,192	KUO ET AL.	
	Examiner Chris C. Chu	Art Unit 2815	

-- **The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 9/19/06.
2.  The allowed claim(s) is/are 25 – 29, 31 – 34, 36, 37, 41 – 45, 47 – 50, 52, 53 and 57 - 64.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All      b)  Some\*      c)  None      of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 7/12/06
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 25 – 29, 31 – 34, 36, 37, 41 – 45, 47 – 50, 52, 53 and 57 - 64 are directed to an allowable product. Pursuant to the procedures set forth in MPEP § 821.04(B), claims 57 – 62, directed to the another species of an allowable product, previously withdrawn from consideration as a result of a species restriction requirement, claims 57 – 62 are hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, **the Species restriction requirement as set forth in the Office action mailed on June 11, 2004 is hereby withdrawn**. In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable.

See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

### ***REASONS FOR ALLOWANCE***

2. Claims 25 – 29, 31 – 34, 36, 37, 41 – 45, 47 – 50, 52, 53 and 57 - 64 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The prior art of record does not teach or suggest, either singularly or in combination, at least a single molding compound without interfaces, encasing a semiconductor chip over a ball grid substrate; a heat spreader mounted over the ball grid substrate and spaced apart from the molding compound to form a gap; and attaching material within the gap at least between the heat spreader and the molding compound, the heat spreader has a shape of an inverted square pie tin having an elongated surrounding lip mounted over the ball grid substrate and the heat spreader has a surface exposed to a surrounding ambient, not contacting the mounding compound and the attaching material as set forth in claims 25 and 41. Masayuki et al. (U. S. Pub. No. 2001/0,004,131) teaches a semiconductor package on a substrate, a heat spreader mounted over the substrate and spaced apart from the semiconductor package to form a gap, and attaching material within the gap at least between the heat spreader and the semiconductor package. Takano et al. (U. S. Pat. No. 6,376,907) teaches a heat spreader having a shape of an inverted square pie tin with an elongated surrounding lip mounted over a ball grid substrate. However, Masayuki et al. and Takano et al. do not teach a single molding compound without interfaces, encasing a semiconductor chip over a ball grid substrate; a heat spreader mounted over the ball grid substrate and spaced apart from the molding compound to form a gap; and attaching material within the gap at least between the heat spreader and the molding compound, the heat spreader has a shape of an inverted square pie tin having an elongated surrounding lip mounted over the ball grid substrate and the heat spreader has a surface exposed to a surrounding ambient, not contacting the mounding compound and the attaching material as set forth in claims 25 and 41.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is 571-272-1724. The examiner can normally be reached on 11:30 - 8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Chris C. Chu  
Examiner  
Art Unit 2815

KENNETH PARKER  
SUPERVISORY PATENT EXAMINER

c.c.

Monday, September 25, 2006